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of 2 hours and 20 minutes; on the 16th 1 hour and 23 minutes out of 1 hour and 50 minutes; on the 17th, 56 minutes out of 2 hours and 15 minutes; and on the 18th, 13 minutes out of 1 hour.

On the 21st the young left the nest. The parents at this nest were exceedingly business-like in the care of their young. They paid little or no attention to the blind and carried on their activities in a regular stereotyped style. Both had a regular method of approach to the nest.

BREEDING OF THE GOSHAWK

(*Accipiter atricapillus*)

AT PETERSHAM, WORCESTER COUNTY, MASSACHUSETTS,
AND OTHER BIRD NOTES FROM PETERSHAM

BY J. A. FARLEY

I take pleasure in reporting the breeding of the Goshawk (*A. atricapillus*) last spring in Petersham, Massachusetts. This is the first record of the breeding of the Goshawk (*A. atricapillus*) in the state. Such an event has long been looked for as individuals of the species have been seen in summer more than once in the past in Massachusetts. The last summer record of the species was by Mr. Gerald H. Thayer who saw an immature Goshawk, August 15, 1900, in Berkshire County this state. (Auk, XIX, 1902, p. 296)

The two young birds in the Petersham Goshawk's nest were taken alive, in the down, May 22, 1902, by Mr. J. Nelson Spaeth of the Harvard Forest at Petersham. The nest had been reported to Mr. Spaeth who visited it first on May 20 when the two, downy, peeping young could be seen from the ground. The nest was high up in a tall white pine, and was a large affair composed of sticks mainly. The startled adult hawk betrayed the nest by flying from it. Only one adult hawk was seen and this bird uttered shrill cries in the woods when the nest was climbed to, but did not come near. The two young Goshawks in their natal down were photographed May 26; and again June 5, in their juvenal plumage. The first picture shows well the mixture of natal down and juvenal feathers sprouting through it—particularly the quills and other feathers of the wing; the second, the juvenal plumage with some of the natal down still adhering, especially on and around the head. One of these young hawks became partly paralyzed and died some time later, but the other lived until July 12.

I saw this bird July 1-4 at the Harvard Forest school, in Petersham. It was confined in a cage in the back yard. When I saw that this very young but practically full-grown Goshawk was in complete *juvenal* dress, I inquired immediately as to its antecedents and learned the facts just related. Although in fine feather and in apparent good health and spirits when I saw him, this young bird died shortly after my visit to Petersham—on July 12, as has been said. The bird was forwarded in the flesh to me, and a skin was made which is now, through the kind offices of Hon. Herbert Parker, in the Thayer Museum at South Lancaster, Massachusetts.

The juvenal plumage of a Goshawk at this age (probably about 2½ months) and born in Massachusetts may be worth a few words of description. The bird was full-grown, but some of its claws were dulled owing to contact with the ground in its cage; length almost 2 feet; length of tail (estimated) 10-11 inches. The bird was not in good condition for the determination of sex, but may have been a female. The cervix is almost tawny and so is in strong contrast to the darker scapulars and interscapulars which are, however, edged with a diminished shade of this same color. This beautiful edging of the feathers of the back extends also all over the wing-coverts; the secondaries in their perfect array are light (almost whitish) tipped; the large, long tertials are the same as the secondaries. The under tail-coverts with their dark "spearheads" are very long—so too the flank-feathers. The buffy suffusion, usual on the chest of young hawks, is rather deep in this specimen and extends well down on the breast.

I am informed by Mr. M. Abbott Frazer, the well-known taxidermist of Boston, of a previous nesting of the Goshawk in Massachusetts which, however, was never recorded. A dozen or more years ago he saw in a small collection of mounted birds in Townsend, Middlesex Co., an adult female Goshawk, together with two badly-blown eggs which were said to have been taken from her nest in that town. Mr. Frazer tells me that he sent one of these eggs by mail to Mr. William Brewster but it was broken in transit. Mr. Brewster kept the fragments of the egg, but never published the record. Mr. Frazer cannot now recall the date which was given him as that of the finding of this nest.

I am glad also to announce the summering of the Winter Wren (*N. hiemalis*) in Petersham. This is the most eastern record of the species in summer in many years in Massa-

chusetts. In 1884 Mr. William Brewster found the bird breeding in Winchendon, another large and very well-wooded Worcester Co. town lying to the north of Petersham and on the New Hampshire state line. There is also the still older record of the breeding of *N. hiemalis* before 1883, in Lynn, made by the late George O. Welch; and the very important and recent record of a nest of this species in Rhode Island, only a few miles from the sea, found by that indefatigable nest-hunter, Mr. Harry Hathaway of Providence. These "eastern" breeding cases of *N. hiemalis* may be wholly accidental; but Winchendon at least has a lot of spruce and balsam, and adjoins Rindge, N. H., another town with plenty of spruce and fir and other northern plants.

Professor R. T. Fisher, director of the Harvard Forest, himself was the first to note the Winter Wren in Petersham. A former member of the U. S. Biological Survey Professor Fisher is ornithologist as well as forester. As director of the Harvard Forest he knows every nook and corner of his 1,775 acres of woods. For the first time in his experience he heard on July 2 of this year the song of the Winter Wren in Petersham. The bird was in a small hemlock swamp in one of the Harvard Forest tracts. On July 3, in company with Professor Fisher and Mr. R. L. Coffin of Amherst, I visited this hemlock swamp where we all saw and heard to our heart's content the Winter Wren as he rummaged around among the fallen trees, stumps, rocks and underbrush. This hemlock swamp has a rocky bottom, more or less, and a sphagnum carpet, and the ground is cumbered with many up-turned trees. It is perhaps one-half acre in extent, and lies in one of the extensive Harvard Forest "tracts," with the foaming East Branch of the Swift river close by. On July 3 the oxalis was still in bloom in this relatively cool place. We noted a 25-foot mountain ash and some black ash, together with mountain maple and yellow birch and more or less rather low and scattering *taxus*.

Professor Fisher tells me that the Pileated Woodpecker (*Phloxotomus pileatus abieticola*) is a resident species in Petersham, and that he considers it to be pretty nearly a common bird although never of course abundant. It should be recalled in this connection that about 70 per cent of the large town of Petersham is wooded country and that a good percentage of this is old heavy timber. Therefore, it would be strange indeed if such a timber-loving species as the big "Black Woodpecker" was not a resident here.

On the evening of July 1 I heard a White-throated Sparrow (*Z. albicollis*) singing in the spruce swamp in the rear of the Harvard Forest dormitory. Professor Fisher has noted this summer three other singing "Peabody Birds" at widely-separated points in town. Last year (1921) the species was rather common in Petersham and bred near the Forest headquarters—as it did this season.

There was a breeding pair of Juncos (*J. hyemalis*) this year near Professor Fisher's house and the species was noted also in 1921 in Petersham. Professor Fisher found in 1921 a Junco's nest in the adjoining town of Hubbardston.

The large and well-wooded town of Petersham lies in the northwestern quarter of Worcester County. Like most of this elevated part of the state the town's surface presents a series of broad ridges whose trend is north and south, the general level of the ridge-tops being 1,100 feet while the intervening valleys are at 700 to 800 feet. It is part of the central plateau or upland which stretches across Massachusetts from the New Hampshire to the Connecticut state lines. The famous Harvard Forest in Petersham is in three separate tracts which total 2,068 acres of which 1,775 acres are forested. There is much white pine in this large acreage as elsewhere in this and adjoining towns. There is some spruce in swamps in the Harvard Forest, the largest swamp being in the "Meadow Water" tract; there is a smaller spruce swamp in rear of the Harvard Forest dormitory. Besides white pine there is a good deal of hemlock in town, and some of this timber in the Harvard Forest is old and very large. In the Forest also there are still a few small pieces of virgin timber. Some of the finest white pines, both as to number and size of trees, in the state today grow in the Harvard Forest. There are hundreds of other acres of woods in the town which also contain much white pine. Lovers of trees will be glad to know that the timber in the Harvard Forest is being handled in the most intelligent and progressive way, and that the land in no case is ever denuded. There are some large woodland holdings outside the Harvard Forest tracts, which are in the hands of owners who appreciate both the aesthetic and commercial value of forest trees, and hence do not carry out wasteful cutting methods on their properties. Thanks to the policy of Harvard University and of these individual owners, it results that in Petersham there is a great forested area of the utmost

importance which preserves for the future, as for today, the most beautiful of the natural resources of the state.

Practically all of the small state of Massachusetts, like the rest of southern New England, is Transition country. Of particular interest in this region is the relatively cool, northern area in which Petersham lies, from the fact that it exhibits a rather notable mingling of "northern" and "southern" trees. Thus, in the woods of Petersham grow important trees of the North, more or less typical of the Canadian faunal area, like the red pine, canoe and yellow birches, sugar maple, beech, basswood and a little red and black spruce. On the same ground grow also such rather characteristic trees of the central hardwoods region to the south (more typical, therefore, of southern Connecticut and the Middle States) as the hickory, tupelo, sassafras, pitch pine and various species of oaks, chief of which is, of course, the white oak oftentimes so splendidly developed in Massachusetts east of the Connecticut river. But the trees which dominate chiefly in the woods in this section are those which attain or at least approximate their highest development in central New England—as the white pine, red oak, chestnut (before the blight), white ash and hemlock.

There is not enough of Canadian zonal plant-life in Petersham for the town to be considered in any sense within the Canadian faunal zone. It lies only on its very "ragged edge", so to speak. Nor are the Canadian faunal birds that summer here many. They are few, both as to numbers and species. Nevertheless, such an extensively wooded area as Petersham, much of it of sizable timber, must in the very nature of the case always show interesting things in the bird-line. A case in point is the Pileated Woodpecker, resident here as one would naturally expect this typical woods-bird to be. As one would naturally expect, also, where there is so much white pine, that white pine bird par excellence, the Blue-headed Vireo, is not only common but relatively abundant. Most plentiful always where white pines are most plentiful—the more white pines, the more Blue-headed Vireos, states the case in a nutshell—the song and the delightful minor notes of the Blue-headed Vireo are ever in the ear in the pines of the Harvard Forest tracts and in other "stands" in town. I have nowhere else in Massachusetts found the species so plentiful except in that other white pine country, southeastern Massachusetts, including southern Plymouth Co., but not Cape Cod, where it is also a common woodland bird.